

A2/T Review for Test 2 Quarter 3

This review sheet is not comprehensive. Make sure to study your old notes and tests as well in order to fully prepare for the exam.

WORK MUST BE DONE ON A SEPARATE PIECE OF PAPER!

1. Solve for x , to the nearest hundredth: $2^x = 7$
2. If $x = u^2v$, rewrite $\log x$ using the properties of logs.
3. If $\log 3 = a$, and $\log 5 = b$, rewrite each of the following in terms of a and b .
 - (a) $\log 9$
 - (b) $\log 15$
 - (c) $\log 25$
 - (d) $\log 45$
 - (e) $\log 225$
4. Solve each equation for the positive value of x .
 - (a) $\log_4 x - \log_4 8 = 1$
 - (b) $2\log_5 x - \log_5 5 = \log_5 125$
 - (c) $\log(x+2) + \log(x-2) = 1$
 - (d) $\log_3 5 + \log_3 x = \log_3(7+x)$
5. Using logarithms, solve for x , $x^{\frac{3}{2}} = 2.36$, to the nearest tenth.
6. Graph $y = \log_2 x$
68. Solve for x :
 - (a) $\log_2 x = 6$
 - (b) $\log_x \frac{1}{5} = -1$
 - (c) $x = \log 0.0001$

7. Simplify: $\frac{1 + \frac{4}{x} + \frac{3}{x^2}}{1 - \frac{9}{x^2}}$
8. Express in simplest form: $\frac{x^3 - 36x}{x^2 + 7x + 6} \div \frac{6x^2 - x^3}{x^2 + x}$
9. Solve for x : $\sqrt{3x+1} - 1 = x - 2$.
10. Solve by completing the square: $3x^2 + 4x = 3$
11. A radioactive material decays according to the formula $A = A_0 10^{-kt}$ where A is the final amount, A_0 is the initial amount, and t is time in years. Find k , to the nearest tenth thousandth, if 500 grams of this material decays to 450 grams in 10 years.
12. Solve and express answer in interval notation: $\frac{x+5}{x-6} > 2$
13. An auditorium has 20 rows of seats. There are 20 seats in the 1st row, 21 seats in the 2nd row, 22 seats in the 3rd row and so on. How many seats are in all 20 rows?
14. Find the sum of the first 150 terms of the sequence 5, 16, 27, 38, 49,
15. Evaluate: $\sum_{i=1}^5 3i$
16. Find the 100th term in the sequence defined by $a_n = \frac{2n}{n+1}$
17. The fourth term of an arithmetic sequence is -8 and the seventh term is 4. Determine the formula for the n th term.
18. Matt bought a new car at a cost of \$32,000. The car depreciates approximately 15% of its value each year.
- Write an equation to model the decay value of this car.
 - What will the car be worth, *to the nearest hundred dollars*, in 10 years?
 - After approximately how many years will the car be worth \$2000
19. Find the 7th term of the sequence 2, 6, 18, 54,
20. Find a_8 for the sequence $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \dots$

21. Find the sum of the first 8 terms of the sequence -5, 15, -45, 135,...
22. The third term of a geometric sequence is 3 and the sixth term is $\frac{1}{9}$. Find the first term of the sequence.
23. Write the first five terms of the sequence $a_1 = 6$
 $a_n = \frac{1}{2}a_{n-1} + 4$
24. What are the 4th, 5th, and 6th terms of this sequence? $a_1 = 1$
 $a_2 = 2$
 $a_{n+1} = \frac{a_n + 2}{1 + a_{n-1}}$
25. Find the center and radius of the circle whose equation is $(x+2)^2 + (y-3)^2 = 10$.
26. Write an equation of the circle with center at (4,0) and radius of 3.
27. Sketch the circle whose equation is $(x-3)^2 + (y+4)^2 = 25$.
28. Find the center and radius of the circle $x^2 + y^2 + 4x - 6y - 12 = 0$.
29. Find the center and radius of the circle $x^2 + 14x + y^2 + 18y = 39$